

INNOVATIVE

and proven
communication
intelligence solutions

Products

VASTech offers a comprehensive portfolio of products for the massive passive monitoring market, based on advanced capabilities such as signaling analysis, big data processing and storage, distributed systems design and sophisticated hardware design.

Monitoring systems: These systems can operate as standalone solutions, or can be integrated into existing customer systems. Continued development focuses on the areas of addressing new protocols, such as webmail and social networking, and on improving the efficiency of intelligence extraction. Both classes of monitoring systems are highly distributable, capable of processing and storing massive amounts of data and intercepts, both meta-data and content of communications.

Zebra: VASTech Zebra is a passive monitoring system which connects to telecoms networks and intercepts voice, fax and SMS communications. Zebra interfaces to E1, STM-1, STM-4, Gigabit Ethernet and 10 Gigabit Ethernet carriers. Functionality includes software-based DCME, roaming number resolution, location updates in mobile networks and international SMS monitoring. Tagging capabilities enhance the workflow and management of different user groups. Further features include target based intercepts, together with intercept collections and hot monitoring to make intelligence investigations more effective and efficient. Advanced CIC mapping capability

enables the effective association of call signalling with content, e.g. in the case of satellite monitoring. Protocol support includes SS7 and VoIP (SIP and H.323). Integrated functionality includes OCR, text search and speaker and gender identification.

Badger: Badger redefines the architecture for broadband monitoring systems, being capable of capturing the traffic on multiples of 10 Gigabit Ethernet and STM64 inputs in a widely distributed deployment with high levels of system availability. Protocols supported include email, MMS and VoIP (SIP and H.323). Badger is the platform of choice for large capacity implementations of Internet monitoring, download analysis, webmail and social networks.

Tools and Services

Analysis Tools: VASTech provides tools which assist the analyst to extract intelligence from vast amounts of traffic. A database of analysis results is built up over time by these tools to enable rapid configuration of a monitoring system to access this traffic when needed.

Satellite Signal Analyser (SSA)

The VASTech SSA performs automated analysis of communication satellite signals to determine the parameters for modem and DCME terminal configuration for each carrier. It decodes the protocols and extracts the content where applicable. The SSA can operate in an automated mode, complemented by a tuning mode which allows the operator to adjust parameters for weak and non-standard signals.

Fibre Signal Analyser (FSA)

The VASTech FSA classifies and records the sub-structures of many STM-64 or 10 Gigabit Ethernet signals simultaneously. The analysis results enable the configuration of equipment for de-multiplexing, de-framing and decoding of underlying TDM and IP signals.

Advanced & custom hardware development: VASTech provides and customises interfacing equipment to provide unobtrusive passive tapping capability, in both electrical and optical domains.

Services: VASTech provides the comprehensive suite of services that would be expected from a leading systems house. This includes project management, system engineering, support, comprehensive training, as well as support for integration development. VASTech also delivers turn-key solutions where required.

No two solutions are the same. For a dedicated and detailed discussion on how VASTech can assist in creating governmental intelligence solutions, contact VASTech directly.

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Satellite and Terrestrial Monitoring Solutions for National, Regional and Transnational Intelligence

COMPANY OVERVIEW



Innovative And Proven
Communication
Intelligence Solutions

Government Intelligence Solutions

Since 1999, VASTech has developed and produced innovative solutions that assist governments on different continents in the prevention of major crime and terrorism.

Installations at our customers are steadily growing in capacity and capability because of the quality intelligence offered by innovative VASTech solutions. VASTech is a technology leader focussing on massive passive solutions with unmatched scalability. VASTech continues to develop innovative technologies that extract intelligence from the vast and ever changing sea of communication.

Rich Intelligence

Capture all the TDM, IP and signaling traffic

- Tens of thousands of channels
- Multiple STM-64 and 10 Gigabit Ethernet signals

Store content and IRI for years

- Petabytes of storage

Use powerful tools to identify and analyze patterns

- Network analysis
- Powerful filters

Identify new targets and monitor past communications

Be prepared for the future



VASTech's massive passive solutions provide complete communications cover to gather national and regional intelligence. It enables customers to monitor all international communication, regional communication via satellite as well as mobile network traffic within the country.

Innovative applications provide the ability to go back in time to investigate relationships, listen to calls and see communications content, including activities of previously unidentified individuals. New targets can thus be found and intelligence extracted from their previous communications. As such it adds significant value to other evidence gathering systems.

The repository of information collected by VASTech monitoring solutions overcomes the typical shortcomings of LI systems, giving access to communication of missed targets

Passive connectivity enables communication monitoring without the costs and complexity of switch integration. It also isolates the monitoring system from the communications infrastructure thus providing autonomous operation and robustness against infrastructure changes.

VASTech systems are highly scalable and distributable - systems that can grow as the customer's needs demand. Tight integration with existing customer installations and applications is enabled through APIs.

Wide Application

VASTech solutions can be implemented from single Capture Units to distributed systems with multiple regional inputs, from 32 E1s through to multiple STM-64 or 10 Gigabit Ethernet signals. Application areas provide complete coverage of national and regional traffic, including:

- International IP and TDM carriers at international switching centres, with roaming number resolution and international SMS and MMS capturing,
- National mobile 2G/3G networks, as well as PSTN carrier networks and IP communication backbones.
- Communication satellites such as Intelsat, Arabsat and Chinastar with integrated DCME classification and de-multiplexing capabilities

VASTech Capture Units may be geographically distributed while at the same time tightly integrated. This provides a unified view of the entire communications landscape and contributes to a comprehensive intelligence picture.



Powerful Design

- **Software-based**, using the latest commercially available hardware, leading to large capabilities in a small footprint and less reliance on vendor support
- **Highly scalable and distributable** with redundancy options
- Continued investment in **protocol and analytics development** and support
- Detailed **audit trail and advanced security** implementation. All actions are monitored and controlled; filter groups constrain what operators can see.

- **Ease of integration** with existing customer systems as well as leading third party software suppliers. Functionality such as OCR, Text Search, Speaker, Language and Gender Identification are easily deployed based on customer preferences, using existing or newly defined integrations. Integration into conventional LI systems turns the VASTech system to be a powerful tool to identify new targets.

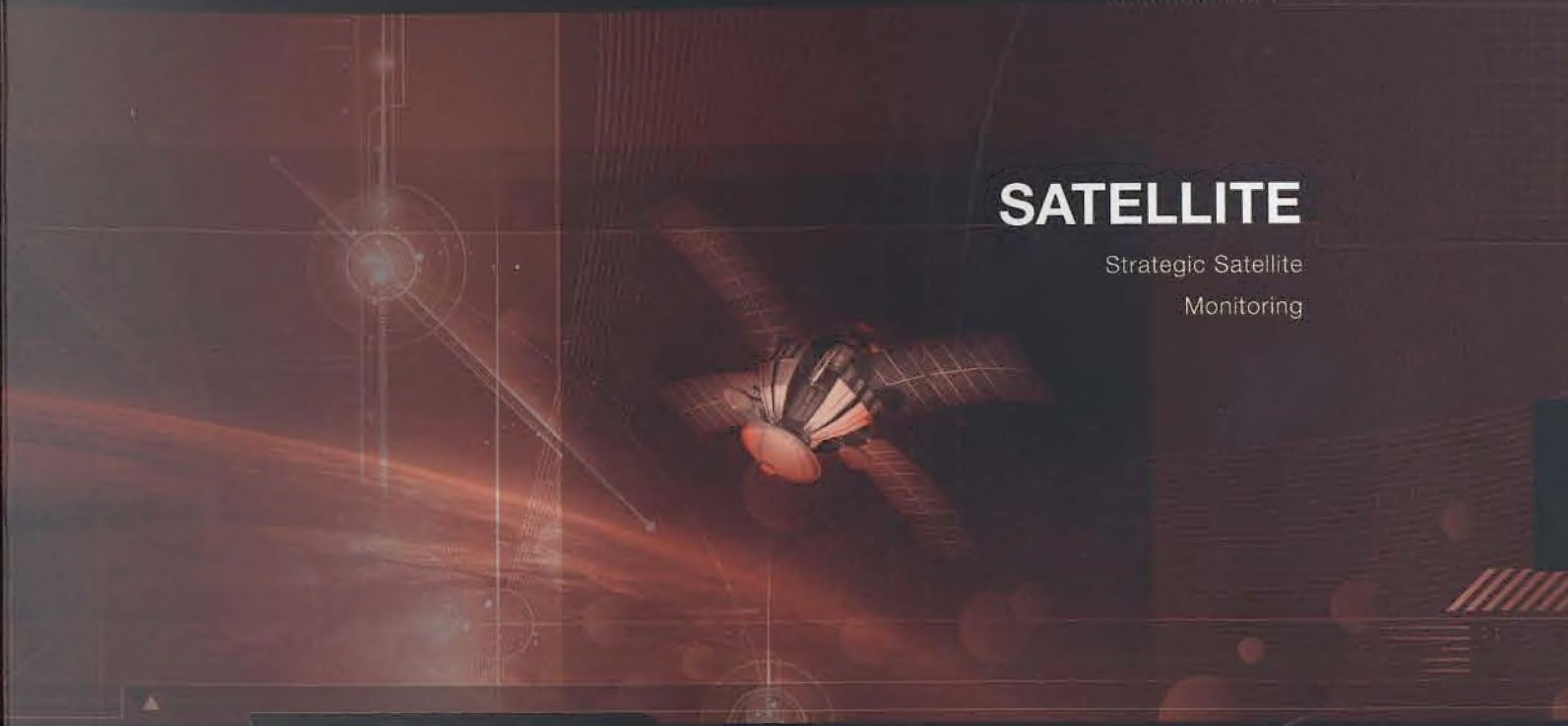
SATELLITE

Strategic Satellite
Monitoring



SATELLITE

Strategic Satellite
Monitoring



Innovative And Proven
Communication
Intelligence Solutions

Benefits

- Unified intelligence picture over terrestrial and satellite networks
- Sophisticated monitoring and analysis functionality
- Built-in features for satellite monitoring
- Rich information, including content
- Highly scalable and distributable with redundancy options
- Small footprint, upgrade incrementally as needs demand
- Ease of integration with analysis applications and other systems
- Software-based, using the latest commercially available hardware





Monitoring Satellite Communications

Footprints of telecommunication satellites cover most of the globe, carrying hundreds of thousands of communication channels. For any country there is significant intelligence value in the communication contained in these channels, especially the communication which occurs outside its borders.

Satellite monitoring is often viewed as having a too high barrier of entry due to infrastructure costs and unmanageable complexity. VASTech overcomes this significant challenge with novel methods of access and very strong automated analysis.

Gathering intelligence from satellite networks requires detailed exploration of the satellite transmission spectrum to discover carriers with intelligence value. It also requires flexible

monitoring equipment that is able to access the variety of content in these carriers.

VASTech develops very large scale solutions for passive monitoring and interception of communications in a wide variety of environments. These solutions include the VASTech Satellite Signal Analyser, Zebra and Badger systems. Satellite analysis and interception capabilities are designed into the product architecture from the ground up.

Powerful Analysis

The VASTech Satellite Signal Analyser (SSA) allows analysts to identify carriers of interest in the spectrum of satellite-borne transmissions and provides all parameters required to gain access to the content. The SSA enables rapid analysis of satellite polarisations by

- discovery of carriers
- computing the carrier parameters to allow demodulation,
- analysing the protocols contained in each carrier, and
- extracting the content

This enables analysts to judge the intelligence value of the communication contained in each carrier and classify the results. A database of these scanning results is progressively built up as new polarisations are scanned and known polarisations re-scanned, offering up-to-date information of all accessible satellite communications. The database contains all the parameters required to rapidly configure an interception system on chosen carriers when demanded by intelligence needs.

The SSA supports a large range of error correction codes, scramblers, modulation schemes and protocols. It also has the ability to classify and decompress DCME streams, analyse VSAT as well as DVB and DVB-S2 signals. The system is flexible, allowing the functionality and capacity to be incrementally expanded as required. Live playback of channels enables quick judgement of the intelligence value of a carrier.

The SSA offers different operating modes which provides flexibility in this complex environment. In the Automatic Scanning mode the system will scan an entire polarisation unattended, delivering all demodulator parameters and protocols of carriers that are discovered. This mode is augmented by the Tuning mode which allows analysts to fine-tune these demodulator parameters and protocol selection. This enables expert human input to be used for carriers with a low signal-to-noise ratio.

Powerful Monitoring

With all the parameters of carriers known, the remaining challenge is to intercept all content and other information related to the communication. The VASTech Zebra and VASTech Badger systems are well-positioned to perform this task due to their power and capacity to process and capture everything to which they are connected while retaining very large amounts of information. These systems enable pro-active intelligence gathering over extended periods to allow the investigator to reconstruct communication scenarios after an incident, providing information on known targets, new targets and their collaborators. These systems are ideally suited to the demands of satellite monitoring due to their small footprint, remote deployment ability and integration features (which make the intercepted information available to other analysis applications). In addition it enables a unified view when deployed with other Zebra and Badger systems, thus offering an overall intelligence picture over any geographical area.

Zebra is designed for use in telecommunication environments and has built-in DCME classification and decompression functionality, which greatly simplifies deployment for satellite monitoring. All carriers, including DCME-compressed carriers, are connected directly to the Zebra E1, SDH or GigE gateways.

DCME terminal types are automatically detected and switched in under software control. This allows rapid reconfiguration and support for a wide range of DCME terminals in a very small footprint. Decompression is performed in software, transparent to the user. The Zebra CIC mapping function resolves the complex task of mapping SS7 signalling to bearer channels, providing A- and B-party numbers, point codes identifying the location of both ends of the channel and also bringing together the two sides of stereo conversations.

Badger is a highly scalable monitoring system designed for use in broadband networks, capable of capturing the traffic on multiples of 10 Gigabit Ethernet and STM64 inputs in a widely distributed and highly robust architecture. Badger is the architectural platform of choice for large capacity implementations of Internet monitoring, download analysis, webmail and social networks.

These VASTech monitoring systems work together to form a fully-featured solution. The software-centric design simplifies the addition of functionality and enables customisation to match unique customer needs. The combination of VASTech SSA, Zebra and Badger is flexible and powerful to address any communication satellite interception requirement.

Valuable Intelligence

Accurate intelligence helps governments make informed decisions to defend a country's sovereignty and protect public safety. Through use of intelligence derived from VASTech monitoring solutions, the correct resources can be efficiently deployed to pre-empt planned operations which threaten these values. Valuable intelligence can be obtained by effectively monitoring the appropriate satellite carriers. VASTech systems offer the opportunity to unlock this potential.



ZEBRA

Strategic
Telecommunication
Network
Monitoring

Benefits

Full spectrum coverage: Accepts intercepts from a variety of networks – GSM and 3G mobile networks, fixed line networks, satellite communications, international telecommunications gateway, high density fibre-optic cables.

Power: Ability to scale to process and store massive volumes of data.

Strategic Intelligence: Power and capacity to record everything, content included; allows for proactive intelligence gathering and the reconstruction of communications scenarios after an incident, exposing collaboration networks visually.

Flexibility: Able to adapt as the monitored environment technology and topology changes, evolves to meet changing user requirements, connects to all types of physical interfaces. Customisation of the system is part of the design philosophy.

Scalability: Expands seamlessly to allow for additional gateways, processing power, storage and Capture Units.

One system: Unified view over entire deployment, regardless of Capture Unit location.

Efficiency: Ultra-dense hardware ensures a small footprint that requires minimum floor space, electricity, air conditioning and support.

Ease of integration: A powerful API allows the integration with existing customer applications and analysis systems.

Zebra Specifications

INTERFACES AND CAPACITY	PROTOCOLS AND ACTIVATION	OTHER FUNCTIONS
<p>E1/T1 Gateway: 128 E1 streams (64 full duplex)</p> <p>GigE Gateway: 4 x 1 Gbps Ethernet streams</p> <p>10 GigE Gateway: 1 x 10 Gbps Ethernet stream</p> <p>Each Zebra Capture Unit can intercept over 100,000 toll quality voice channels (meta-data and content) simultaneously.</p> <p>Zebra Datacentre unifies up to 200 Zebra Capture Units into a single system.</p>	<p>SS7:</p> <ul style="list-style-type: none"> General: MTP2, SAAL, MTP3, TUP, ISUP, TCAP, MAP, SCCP SIGTRAN: M2UA, M3UA 2G/GSM – GERAN: BSSAP 3G/UMTS – UTRAN: RANAP, Iu-UP GSM+UMTS: DTAP, SMS <p>SS5:</p> <ul style="list-style-type: none"> VoIP: SIP, SIP-I, SIP-T, H.323, H.248, SDP, T.38 ISDN: LAPD, Q.931 	<p>CIC mapping: automated scanning and statistical correlation with user validation;</p> <p>Arbitrary input connection, geographically distributed, across gateways;</p> <p>Mobile identities:</p> <ul style="list-style-type: none"> Temporary identity translation: TMSI to IMSI, MSRN to MSISDN/IMSI; Permanent identity translation: IMSI to MSISDN, IMEI to IMSI/MSISDN; <p>Integrated DCME classification and decompression.</p>



ZEBRA

Strategic Telecommunication
Network Monitoring



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Intelligence Solutions



EXPOSE CRIMINAL NETWORKS

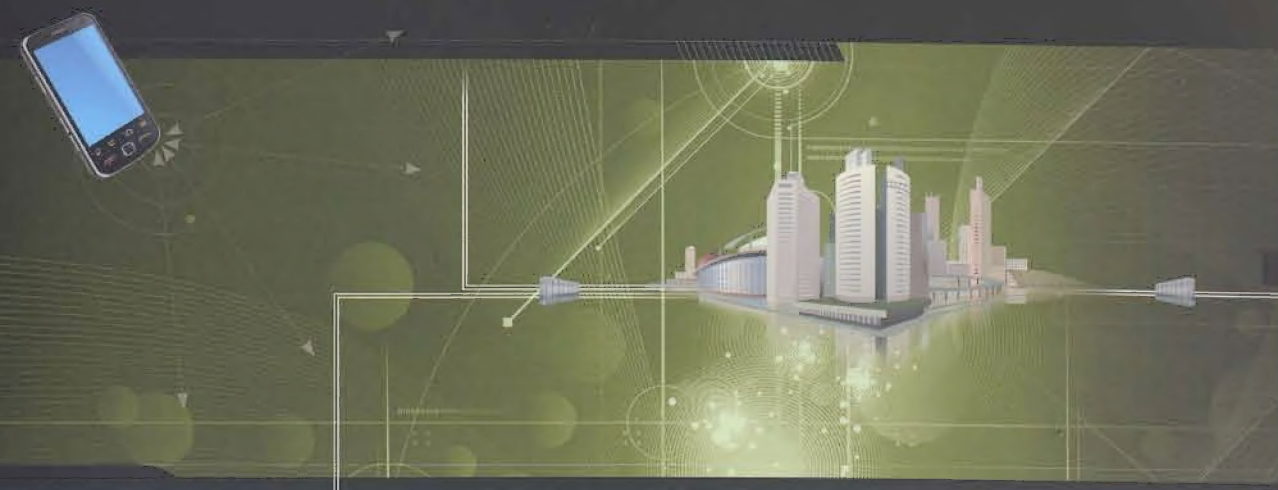
Uncover Communications

All content is retained online in the Zebra system for extended periods of time, allowing immediate playback or viewing. Analysis of this intercepted data allows the investigator to identify targets and discern relationships which may have their origin years into the past. The Zebra network view is particularly useful in this regard, as it allows for the visual exploration of a network of relationships and interactions, starting from any chosen communication. More crucially, Zebra offers investigators the opportunity to view or listen to the content of these past conversations, further enhancing their insight. This makes it possible for the analyst to uncover the hierarchy of an organisation, using as a starting point a single conversation and reviewing current and historical communication.

Unified View, Unlimited Growth

Since Zebra can be deployed as a secure distributed solution, comprising multiple Zebra Capture Units, it enables the intercept points to be located close to the point of traffic aggregation. A unified view is offered across all these intercept points, allowing for a single integrated interpretation of all telecommunications in the system. The ability of the solution to interact with a mix of interfaces and backhaul traffic from remote locations enables it to be deployed exactly according to individual customer needs. Depending on the legal mandate of the security agency, the coverage can include a mix of all internal communications, communications traversing the country's borders and satellite communication outside the borders.

Moreover, as customer requirements evolve, existing Zebra Capture Units can be expanded or additional Units deployed to accommodate any increase in traffic volumes. The integrated CIC mapping function enables rapid configuration of signalling with arbitrary connections of carriers, while signalling information can be shared amongst capture units in different locations. In addition, roaming support for mobile devices allows the end user to be identified, regardless of where he travels.



Effective and Efficient

The Zebra solution can be deployed cost efficiently both in small and very large configurations. A high end system can comprise of more than 100,000 simultaneous voice channels, allowing it to capture up to one billion intercepts per day and storing in excess of 5,000 Terabytes of information. The high density of connectivity, processing and storage results in a small footprint for the solution.

The system is designed for TDM and IP telecommunications traffic, ideally suitable for use in mobile (GSM and 3G) networks, fixed-line networks, satellite carriers, high density fibre-optic cables and international gateway exchanges.



The current reality is that criminals and enemies of the public have access to very potent communication systems. Their ability to co-ordinate activities over vast distances is unprecedented, demanding accurate and rapid response from security agencies. The VASTech Zebra solution has been designed to provide the means to meet these challenges head on.

Zebra is part of VASTech's comprehensive product portfolio that includes the Badger broadband interception system and advanced communications analysis tools.

The Power to Act



Strategic Telecommunication Network Monitoring

Government security agencies face huge challenges in their combat against crime and terrorism. VASTech's telecommunication network monitoring solutions provide an opportunity to meet these head-on.

Governments have an obligation to protect their sovereignty and protect their citizens against security threats and crime. In the modern technological society, where terrorism and organised crime are ever-growing concerns, achieving the above has become increasingly difficult. This is due to the fact that criminals and terrorists are – thanks to today's high-tech telecommunications networks – able to communicate more freely than ever. However, these communications can also be a rich source of intelligence and the implementation of the right solutions to obtain this intelligence makes it possible to turn the tables in favour of security and stability.

Understanding the necessity of such operations, VASTech has developed passive monitoring solutions that are designed to offer security agencies access to the massive volumes of information generated via telecommunications services, for the purposes of analysis and investigation. These solutions offer users the power to review the content of communications over extended periods of time, discovering new targets and uncovering their relationships with collaborators.

Massive Passive Monitoring

The global nature of terrorism and crime threats has increased the scope and demands of passive surveillance:

- Large volumes of traffic need to be intercepted (1000's of E1s) to cover large geographical areas;
- Different types of interfaces are required (E1/T1; STM-1/STM-4, Gigabit Ethernet);
- Large storage capacity (Petabytes) and vast processing are required to intercept all possible content and metadata;
- Changes in protocols or telecommunications environments continue to occur.

The VASTech Zebra solution is designed to address these demands elegantly and flexibly. The use of passive connectivity ensures isolation from the networks being monitored and independence from operator personnel, thereby allowing independent operation for the security agency.

Zebra offers sophisticated integrated tools to correlate signalling with bearer channels, analyse protocols and extract content. Functions such as tagging, target selection, intercept collections, flexible search, rules-based post-processing and integration with external analysis applications allow the mass of information to be managed and manipulated to unearth the hidden intelligence. The architecture is designed to intercept all content and metadata of voice, SMS, MMS, email and fax communications on the connected networks, creating a rich repository of information.



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